

[0032] The tracked object data 324 may include any suitable data stored for any suitable number and type of tracked objects. In FIG. 3, a plurality of tracked objects is indicated as tracked object 1 336 and tracked object N 337. Various state data 338 is also illustrated for tracked object 1. For example, location information 340, including but not limited to a most recent location and/or past locations, may be stored. Such location information also may comprise information regarding past user interactions with an object. This may allow for the analysis of user patterns to help locate lost objects, for example. Any suitable location information may be stored. Examples include information regarding a physical location of a current use environment (e.g. GPS coordinates) and/or contextual location data (e.g. location relative to other tracked/recognized objects).

[0033] Further, information regarding a value of a variable property 342 of the object may be stored. For example, as described above, an absence of a particular food item in a refrigerator, a level of milk in a milk carton, and/or any other suitable value related to a variable property of an object may be stored. It will be understood that these particular types of state information are described for the purpose of example, and that any other suitable state information may be stored.

[0034] Other information than state information also may be stored for an object. For example, in embodiments that adaptively learn and designate objects as tracked, importance score data 344 may be stored for tracked objects to determine whether to maintain a designation of an object as tracked. For example, if a user stops interacting with an object that is not lost, over time the score for that object may decrease, and the object may cease to be tracked. Further, alert conditions 346 also may be stored, wherein the alert conditions define when alerts are to be triggered for specified objects, as well as a nature of an alert to be provided.

[0035] Additionally, contextual data 350 may be stored as object information to help in the determination of an importance score for an object. For example, contextual data 350 may define locations 352, times 354, and/or other contextual information as “important” for the purpose of assigning an importance score to an object. Examples of locations 352 may include actual physical locations, contextual rules regarding proximity to other tracked objects, and other such location data. Examples of times 354 may include clock/calendar times, and/or contextual rules regarding time intervals between observed object interactions and other events, such as changes in location (e.g. time between interacting with an object and then leaving the house). The contextual data 350 further may comprise contextual rules regarding how to apply location, time, and other contextual information in determining importance scores for objects.

[0036] In some embodiments, the analysis of image data for objects may be performed at a later time, rather than in real time. As such, the object information store 322 may include image data 355 that has not been processed by the object recognition and tracking module 314. In such embodiments, image analysis may be performed when a user requests information about an object to locate the object in the image data by locating relevant image data in the stored image data 355. To assist with locating relevant image data, various metadata may be stored with the image data, such as a location (e.g. GPS data) and/or a time at which the image data was acquired.

[0037] In some embodiments, the object tracking and storage may be performed locally on the object tracking

device 302. In other embodiments, as mentioned above, the object tracking device 302 may communicate with remote object tracking service 306 via a network. This may allow object data and image data to be shared between users. The remote object tracking service 306 may perform any of the object recognition, tracking, and alert generation functions described above with regard to the object tracking device 302. Further, information received from users may be stored in a user information store 356, which is illustrated as storing information for a plurality of users represented by user 1 358 and user N 359. Any suitable information may be stored, including but not limited to object data 360 (e.g. tracked and untracked object information), image data 362 (e.g. point cloud depth data and/or two-dimensional image data), and contextual data 364 (e.g. places/times/other contexts used for determining whether to track objects with which a user interacts). Further, the user data also may comprise information regarding trusted other users 366 with whom object data, image data, and/or other information may be shared. For example, a user may wish to access the image data of other family members to aid in the detection of lost objects. As a more specific example, if a user's spouse moves the user's keys from a table into a drawer, the spouse's object and/or image data may be searched along with the user's object and/or image data to help locate the keys.

[0038] FIG. 4 shows a flow diagram depicting an embodiment of a method 400 for tracking objects via a see-through display device. Method 400 comprises, at 402, receiving image data of a background scene viewable through a see-through display system from an image sensor, wherein the term “background scene” denotes a field of view of a real-world scene located behind the see-through display relative to a user. Any suitable image data may be acquired, including but not limited to two-dimensional video data 404 (RGB and/or grayscale) and depth data 406.

[0039] Method 400 next comprises, at 408, identifying an inanimate moveable object in the image data, either in real time or at a later time upon receipt of a trigger (e.g. user request to locate an object, contextual trigger, etc.), and at 410, determining whether the detected inanimate moveable object is a tracked object. As described above, the inanimate moveable object may be identified in any suitable manner, including but not limited to via classification methods that compare the moveable object to object models.

[0040] Likewise, as described above, an inanimate moveable object may be defined as tracked in any suitable manner. For example, as indicated at 412, a user may request (via voice, gesture, and/or other suitable user input) that an object be designated as tracked, and scan an image of the object. Additionally, some objects may be designated as important by a developer and/or manufacturer of the see-through display device.

[0041] Further, as indicated at 414, an inanimate moveable object may be designated as tracked if a score (“importance score”) that is assigned based upon user interactions with the object meets a threshold importance score. Any suitable factor or combination of factors may be used to determine such a score. For example, an importance score may be determined at least partially based upon a number, frequency, and/or pattern of user interactions with the object over time, as indicated at 416. Further, locational information also may be used in determining an importance score, as indicated at 418. Such locational information may